

What Is Claimed Is:

1. A method of training a radio receiver, comprising the steps of:  
receiving an initial portion of a data packet at the receiver, the initial  
5 portion containing at least one flag to identify a corresponding reference training  
sequence to be selected by the receiver and to indicate whether a training  
sequence is inserted in the data packet;  
receiving the training sequence at the receiver according to the at least  
one flag, the training sequence being positioned within the data packet at a  
10 midamble between the initial portion and a first segment of the data packet;  
comparing, at the receiver, the received training sequence with the  
selected reference training sequence; and  
generating one or more correction signals based on the results of the  
comparison.  
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2. The method of claim 1, comprising the additional step of:  
adjusting equalization parameters of the receiver based on the one or  
more correction signals.
- 20 3. The method of claim 1, wherein the at least one flag indicates a  
modulation scheme applied to the first segment, and any subsequent segments  
received within the data packet.
- 25 4. The method of claim 1, wherein the at least one flag is one modulation  
flag indicating a modulation scheme applied to the first segment, and any  
subsequent segments received within the data packet.
5. The method of claim 1, wherein the initial portion is received having a  
first modulation scheme applied and the midamble is received having a second  
30 modulation scheme applied, the second modulation scheme also being applied

to the first segment, and any subsequent segments received within the data packet.

6. The method of claim 5, wherein the second modulation scheme is less  
5 robust than the first modulation scheme.

7. A method of training a radio receiver, comprising the steps of:  
receiving an initial portion of a data packet at the receiver, the initial  
portion containing a first flag to identify a corresponding reference training  
10 sequence to be selected by the receiver and a second flag to indicate whether a  
training sequence is inserted in the data packet;

- receiving the training sequence at the receiver according to the first and  
second flags, the training sequence being positioned within the data packet at a  
midamble between the initial portion and a first segment of the data packet;  
15 comparing, at the receiver, the received training sequence with the  
selected reference training sequence  
generating one or more correction signals based on the results of the  
comparison; and

8. The method of claim 7, comprising the additional step of:  
20 adjusting equalization parameters of the receiver based on the one or  
more correction signals.

9. The method of claim 7, wherein the first flag indicates a modulation  
25 scheme applied to the first segment, and any subsequent segments received  
within the data packet.

10. The method of claim 7, wherein the initial portion is received having a  
first modulation scheme applied and the midamble is received having a second  
30 modulation scheme applied, the second modulation scheme also being applied

to the first segment, and any subsequent segments received within the data packet.

11. A method of compensating for distortion in a radio communication system utilizing link adaptation, such that a modulation scheme applied to data packets varies according to a link quality, the method comprising the steps of:

inserting, at a transmitter, in an initial portion of a data packet to be transmitted, at least one flag to identify a corresponding reference training sequence to be selected by a receiver and to indicate whether a training sequence is inserted within the data packet;

inserting, at the transmitter, when the training sequence is indicated, the training sequence within the data packet at a midamble between the initial portion and a first segment of the data packet;

receiving the initial portion of a packet at the receiver and reading the at least one flag to determine a corresponding reference training sequence when the training sequence is indicated;

receiving the training sequence at the receiver and comparing the received training sequence with the reference training sequence selected at the receiver; and

generating one or more correction signals based on the results of the comparison.

12. The method of claim 11, comprising the additional step of:

adjusting equalization parameters of the receiver based on the one or more correction signals.

13. The method of claim 11, wherein the at least one flag indicates a modulation scheme applied to the first segment, and any subsequent segments transmitted within the data packet.

14. The method of claim 11, wherein the initial portion is transmitted having a first modulation scheme applied and the midamble is transmitted having a second modulation scheme applied, the second modulation scheme also being applied to the first segment, and any subsequent segments transmitted within  
5 the data packet.

15. The method of claim 14, wherein the second modulation scheme is less robust than the first modulation scheme.

10 16. A trainable radio receiver comprising:  
a receiving section to receive an initial portion of a data packet at the receiver, the initial portion containing at least one flag to identify a corresponding reference training sequence to be selected by the receiver and to indicate whether a training sequence is inserted in the data packet; and  
15 a processor to process the training sequence at the receiver according to the at least one flag, the training sequence being positioned within the data packet at a midamble between the initial portion and a first segment of the data packet, to compare the received training sequence with a reference training sequence previously known to the receiver, and to generate one or more  
20 correction signals based on the results of the comparison.

17. The receiver of claim 16, further comprising an equalizer to adjust equalization parameters of the receiver based on the one or more correction signals.

25 18. The receiver of claim 16, wherein the at least one flag indicates a modulation scheme applied to the first segment, and any subsequent segments received within the data packet.

19. The receiver of claim 16, wherein the initial portion is received having a first modulation scheme applied and the midamble is received and processed having a second modulation scheme applied, the second modulation scheme also being applied to the first segment, and any subsequent segments received within the data packet.

20. The receiver of claim 19, wherein the second modulation scheme is less robust than the first modulation scheme.

21. A transmitter comprising:  
a processor operative to insert at least one flag to identify a corresponding reference training sequence to be selected by the receiver and to indicate whether a training sequence is inserted within data packets to be transmitted, the processor inserting the training sequence at a midamble of the data packets between an initial portion and a first segment, and  
a modulator operative to apply at least one modulation scheme to the data packets prior to transmission; and  
transmission means to transmit the modulated data packets.

22. The transmitter of claim 21, wherein the at least one flag indicates a modulation scheme applied to the first segment, and any subsequent segments transmitted within the data packet.

23. The transmitter of claim 21, wherein the initial portion is transmitted having a first modulation scheme applied, and the midamble is transmitted having a second modulation scheme applied, the second modulation scheme also being applied to the first segment, and any subsequent segments received within the data packet.

24. The transmitter of claim 23, wherein the second modulation scheme is less robust than the first modulation scheme.

25. A computer program product for controlling communication over a communication channel in a radio receiver, the computer program product comprising:

a computer-readable storage medium having computer-readable program code means embodied in said medium, said computer-readable program code means including:

logic that processes an initial portion of a data packet containing at least one flag to identify a corresponding reference training sequence to be selected by the receiver and to indicate whether a training sequence is inserted in the data packet;

logic that processes a received training sequence according to the at least one flag, the received training sequence being positioned within the data packet at a midamble between the initial portion and a first segment portion of the data packet;

logic that compares the received training sequence with a previously known reference training sequence; and

logic that adjusts equalization parameters of the receiver based on the results of the comparison.

26. The computer program product of claim 25, wherein the at least one flag indicates a modulation scheme applied to the first segment, and any subsequent segments received within the data packet.

27. The computer program product of claim 25, wherein the initial portion is received by the receiver having a first modulation scheme applied and the midamble is received and processed having a second modulation scheme

applied, the second modulation scheme also being applied to the first segment, and any subsequent segments received within the data packet.

28. The computer program product of claim 27, wherein the second  
5 modulation scheme is less robust than the first modulation scheme.